



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,475	09/29/2004	Marten Erik Van Dijk	NL 020268	5687

24737 7590 03/12/2007  
PHILIPS INTELLECTUAL PROPERTY & STANDARDS  
P.O. BOX 3001  
BRIARCLIFF MANOR, NY 10510

EXAMINER
----------

TORRES, JOSEPH D

ART UNIT	PAPER NUMBER
----------	--------------

2133

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/12/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/509,475

Applicant(s)

VAN DIJK ET AL.

Examiner

Joseph D. Torres

Art Unit

2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 January 2007.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.  
4a) Of the above claim(s) 11 and 13-16 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-10 and 12 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 29 September 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election of Group I (claims 1-10 and 12) in the reply filed on 01/24/2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 11 and 13-16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 01/24/2007.

### *Drawings*

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "15" in Figure 2 has been used to designate different elements. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of

Art Unit: 2133

any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The **form and legal phraseology often used in patent claims**, such as "means" and "**said,**" should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because "said" is used throughout the abstract. Correction is required. See MPEP § 608.01(b).

### ***Claim Objections***

3. Claim 9 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 9 includes all possibilities, hence fails to further claim 1.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-10 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites, "said code over a first Galois field" and "a horizontal error correcting code over a second Galois field". Since not only can the symbols or bits in a codeword be elements of a Galois field, but also, so can the codewords be elements of a Galois field and it is not clear what Galois field the Applicant is referring to.

Claim 12 recites, "said code over a first Galois field" and "a horizontal error correcting code over a second Galois field". Since not only can the symbols or bits in a codeword be elements of a Galois field, but also, so can the codewords be elements of a Galois field and it is not clear what Galois field the Applicant is referring to.

Claims 2-10 depend from claim 1 hence are rejected for the same reason.

Claim 4 recites the limitation "the first Galois field  $GF(2^8)$ " in lines 3-4. There is insufficient antecedent basis for this limitation in the claim. For the purposes of advancing prosecution, the Examiner assumes --the first Galois field-- was intended since claim 1 only refers to a first Galois field.

Art Unit: 2133

Claim 9 recites the limitation "the complete code block" in lines 3-4. There is insufficient antecedent basis for this limitation in the claim.

Furthermore; encoding a complete code block does not make sense since complete implies the complete block code is complete and encoding implies that the block is not complete still requiring additional coding.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claims 1, 2, 9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue; Tohru et al. (US 5712861 A, hereafter referred to as Inoue) in view of Ohira; Masaki et al. (US 7024616 B2, hereafter referred to as Ohira).

35 U.S.C. 103(a) rejection of claim 1 and 12.

Art Unit: 2133

Inoue teaches encoding the rows of at least said user data sub-block separately or in groups using a horizontal error correcting code ( $C_1$  code in Figure 1 in Inoue is a horizontal error correcting code encoding the rows of a 76x138 user data sub-block) over a second Galois field (the  $C_1$  code in Inoue is over the Galois field for the  $C_1$  Reed-Solomon code) different in size than said first Galois field (the  $C_2$  code is over the Galois field for the  $C_2$  Reed-Solomon code) to obtain horizontal parities, embedding said horizontal parities as additional layer in said error correcting code (See Figure 1 in Inoue).

However Inoue does not explicitly teach the specific use of the second Galois field larger than said first Galois field.

Ohira, in an analogous art, teaches use of the second Galois field larger than said first Galois field (Figures 9A-9B in Ohira; Note: Figure 9A is a list of  $C_1$  codes and Figure 9B is a list of code for  $C_2$  codes).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Inoue with the teachings of Ohira by including use of the second Galois field larger than said first Galois field. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of the second Galois field larger than said first Galois field would have provided the most efficient code which allows for flexible  $C_1$ -encoding and  $C_2$ -encoding and maximizes the transmittable distance (col. 19, lines 46-50 in Ohira).

35 U.S.C. 103(a) rejection of claim 2.

Figure 1 in Inoue.

35 U.S.C. 103(a) rejection of claim 9.

Claim 9 includes all possibilities, hence fails to further claim 1.

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue; Tohru et al. (US 5712861 A, hereafter referred to as Inoue) and Ohira; Masaki et al. (US 7024616 B2, hereafter referred to as Ohira) in view of Nakakita; Kumiko et al. (US 6061820 A, hereafter referred to as Nakakita).

35 U.S.C. 103(a) rejection of claim 3.

Inoue and Ohira substantially teaches the claimed invention described in claims 1 and 2 (as rejected above).

However Inoue and Ohira does not explicitly teach the specific use of padding with zeros.

Nakakita, in an analogous art, teaches use of padding with zeros (col. 37, lines 5-10 in Nakakita).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Inoue and Ohira with the teachings of Nakakita by including use of padding with zeros. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary



Art Unit: 2133

skill in the art would have recognized that use of padding with zeros would have provided a means for preserving the integrity of a particular communications data structure even when there are insufficient data bits to fill the particular communications data structure.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue; Tohru et al. (US 5712861 A, hereafter referred to as Inoue) and Ohira; Masaki et al. (US 7024616 B2, hereafter referred to as Ohira) in further view of Tanaka; Shinichi (US 5276674 A, hereafter referred to as Tanaka).

35 U.S.C. 103(a) rejection of claim 4.

In addition symbols in columns are over  $GF(2^8)$  (col. 12, line 65-68 in Inoue).

Figures 9A and 9B in Ohira teach long distance codes.

Note: Tanaka is brought in as a teaching reference since all of the elements of claim 4 are already taught in Inoue and Ohira. Tanaka teaches that the long codes such as in Figures 9A and 9B in Ohira are long distance codes (col. 1, lines 55-60 in Tanaka).

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue; Tohru et al. (US 5712861 A, hereafter referred to as Inoue), Ohira; Masaki et al. (US 7024616 B2, hereafter referred to as Ohira) and Tanaka; Shinichi (US 5276674 A, hereafter referred to as Tanaka) in view of Inoue; Sadayuki et al. (US 5696774 A, hereafter referred to as Inoue\_ Sadayuki).

35 U.S.C. 103(a) rejection of claim 5.

Inoue, Ohira and Tanaka substantially teaches the claimed invention described in claims 1, 2 and 4 (as rejected above). In addition, col. 4, lines 31-45 in Ohira teach arbitrary block code sizes ( $K_r$ ,  $N_r$ ), which encompass a (306, 304) code.

However Inoue, Ohira and Tanaka do not explicitly teach the specific use of  $GF(2^9)$ .

Inoue\_ Sadayuki, in an analogous art, teaches use of  $GF(2^9)$  (col. 49, lines 20-25 in Inoue\_ Sadayuki).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Inoue, Ohira and Tanaka with the teachings of Inoue\_ Sadayuki by including use of  $GF(2^9)$ . This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of  $GF(2^9)$  would have provided a means for preserving the integrity of a particular communications data structure even when there are insufficient data bits to fill the particular communications data structure.

9. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue; Tohru et al. (US 5712861 A, hereafter referred to as Inoue), Ohira; Masaki et al. (US 7024616 B2, hereafter referred to as Ohira) and Tanaka; Shinichi (US 5276674 A, hereafter referred to as Tanaka) in view of Hattori et al. (M. Hattori, R. J. McEliece, G. Solomon "Subspace subcodes of Reed-Solomon codes", IEEE transactions on IT, vol. 44, no. 5, September 1998, hereafter referred to as Inoue\_ Hattori).

35 U.S.C. 103(a) rejection of claim 6.

Inoue, Ohira and Tanaka substantially teaches the claimed invention described in claims 1, 2 and 4 (as rejected above).

However Inoue, Ohira and Tanaka do not explicitly teach the specific use of a Subspace Subcode of a Reed Solomon (SSRS) code.

Hattori, in an analogous art, teaches use of a Subspace Subcode of a Reed Solomon (SSRS) code. In addition, Hattori teaches encoding over an arbitrary field  $GF(2^v)$ , which encompasses  $GF(2^9)$ .

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Inoue, Ohira and Tanaka with the teachings of Hattori by including use of a Subspace Subcode of a Reed Solomon (SSRS) code. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of a Subspace Subcode of a Reed Solomon (SSRS) code would have provided high-rate error protection for high-performance systems (abstract in Hattori).

35 U.S.C. 103(a) rejection of claim 7.

Hattori teaches encoding over an arbitrary field  $GF(2^v)$ , which encompasses  $GF(2^{10})$ .

35 U.S.C. 103(a) rejection of claim 8.

Art Unit: 2133

Hattori teaches use of a Subspace Subcode of a Reed Solomon (SSRS) code. In addition, Hattori teaches encoding over an arbitrary field  $GF(2^v)$ , which encompasses  $GF(2^{10})$ .

10. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue; Tohru et al. (US 5712861 A, hereafter referred to as Inoue) and Ohira; Masaki et al. (US 7024616 B2, hereafter referred to as Ohira) in further view of Tanaka; Shinichi (US 5276674 A, hereafter referred to as Tanaka) and BAGGEN, C P M J et al. (WO 9934271 A, hereafter referred to as BAGGEN).

35 U.S.C. 103(a) rejection of claim 10.

Inoue and Ohira substantially teaches the claimed invention described in claims 1 and 2 (as rejected above).

In addition symbols in columns are over  $GF(2^8)$  (col. 12, line 65-68 in Inoue).

Figures 9A and 9B in Ohira teach long distance codes.

Note: Tanaka is brought in as a teaching reference since all of the elements of claim 4 are already taught in Inoue and Ohira. Tanaka teaches that the long codes such as in Figures 9A and 9B in Ohira are long distance codes (col. 1, lines 55-60 in Tanaka).

However Inoue, Ohira and Tanaka do not explicitly teach the specific use of Burst Indicator Subcode.

BAGGEN, in an analogous art, teaches use of Burst Indicator Subcode (Figure 5 in BAGGEN).

Art Unit: 2133

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Inoue, Ohira and Tanaka with the teachings of BAGGEN by including use of Burst Indicator Subcode. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of Burst Indicator Subcode would have provided clue words for a Picket code (last paragraph page 3 of BAGGEN).

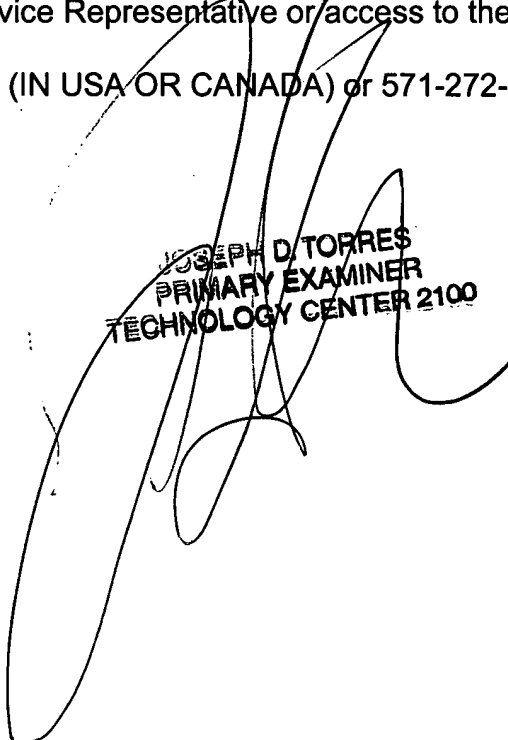
### ***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (571) 272-3829. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2133

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



JOSEPH D. TORRES  
PRIMARY EXAMINER  
TECHNOLOGY CENTER 2100

Joseph D. Torres, PhD  
Primary Examiner  
Art Unit 2133